PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :
C23C 16/00, 16/04, 16/18, C07F 3/00

A1

(11) International Publication Number: WO 00/23635

(43) International Publication Date: 27 April 2000 (27.04.00)

(21) International Application Number: PCT/US99/24533

(22) International Filing Date: 20 October 1999 (20.10.99)

(30) Priority Data:

60/105,158	21 October 1998 (21.10.98)	US
60/126,793	30 March 1999 (30.03.99)	US

(71) Applicant *(for all designated States except US)*: THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE [US/US]; 17 Quincy Street, Cambridge, MA 02138 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: GORDON, Roy, G. [US/US]; 22 Highland Street, Cambridge, MA 02138 (US). TEFF, Daniel [US/US]; Apartment 2007, Unit 4/28–Building 3, 7125 East Superstition Springs Boulevard, Mesa, AZ 85208 (US).

(74) Agent: SCOZZAFAVA, Mary, Rose; Clark & Elbing LLP, 176 Federal Street, Boston, MA 02110–2214 (US).

(81) Designated States: CA, JP, KR, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published

With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: LIQUID COMPOUNDS FOR FORMATION OF MATERIALS CONTAINING ALKALINE EARTH METALS

(57) Abstract

A liquid precursor is provided for the formation of alkaline earth containing materials. The liquid precursor comprises an alkaline earth metal beta–diketonate bound to an amine. For example, a liquid compound was formed by reacting N,N',N''–trihexyldiethylenetriamine with barium 2,2,6,6–tetramethyl–3,5 heptanedionate. Films containing alkaline earth metals are deposited from vapors of the precursor liquids and, optionally, oxygen or other sources of oxygen. This process may be used to deposit barium strontium titanate films having a high dielectric constant. The liquid precursors may also be used for spray coating and sol–gel deposition of materials. The figure is an X–ray crystallographic structure of strontium bis (2,2,6,6–tetramethyl-heptane–3,5–dionate) with N,N', N''–triamyldiethylenetriamine.